REMARKS

Claims 1-62 are pending in this Application. By this Amendment, claims 1-2, 6-10, 12-13, 15-16, 18-23, and 25-28 have been amended, and new claims 34-62 have been added. No new matter is added.

Support for the new claims may be found at least in the original claims 1-33 and throughout the specification (e.g., Figs. 2-5 and their corresponding descriptions at page 7-22, etc.). For example, support for "processing device," as recited in claim 42, may be found at page 7, line 25, of the specification; support for "mobile station," as recited in claim 62, may be found at page 3, line 32, ("mobile system") of the specification; and support for "at least one antenna," as recited in claim 62, may be found at least in Fig. 5 and its corresponding description at pages 19-21.

Reconsideration in view of the above amendments and the following remarks is respectfully requested.

I. Objection to the Claims and Rejection Under 35 U.S.C. §112, Second Paragraph

The Office Action objects to claim 33 as being indefinite; and rejects claims 31-33 under 35 U.S.C. §112, second paragraph, as being indefinite. The Office Action sets forth similar arguments in the objection of claim 33 and the rejection under §112, second paragraph, of claims 31-33.

In summary, the Office Action alleges that claims 31-33 are indefinite because they recite the functions of a transmitter, whereas claim 29, from which claims 31-33 depend, is directed to a receiver. The Examiner thus indicates that the "encoder," as recited in claims 31-33 will be interpreted as a decoder. The Applicants strongly disagree with the Examiner's interpretation of claims 31-33.

The Examiner appears to be interpreting claims 31-33 as incorporating some "transmitter" feature into the receiver of claim 29. However, none of the claims 31-33 state that the receiver of claim 29 "comprises" the respective features of these claims. Claim 31 is directed to "encoders" that are "for use" with the receiver of claim 29. Claims 32-33 are directed to "sequences" that are assigned to the "encoders" of claim 31. Claiming an encoder that is "for use" with a receiver does not necessarily mean that the receiver "comprises" the encoder. For example, the encoder may be located within a transmitter that is separate from the receiver, but that is "for use" with the receiver.

Accordingly, the Applicants respectfully submit that claims 31-33 are not indefinite, and respectfully request that the Examiner withdraw the objection to claim 33 and the §112, second paragraph, rejection of claims 31-33.

II. Rejection Under 35 U.S.C. §101

The Office Action rejects claim 28 under 35 U.S.C. §101 as failing to fall within a statutory category of invention. Claim 28 has been amended to recite "a computer-readable medium," responsive to the rejection.

Support for this amendment may be found at least in the original claim 28, which was directed to a "[c]omputer program product directly loadable into the internal memory of a digital processing system and comprising software code portions for performing the method of claim 1 when said product is run by said digital processing system." The Applicants submit that the "computer-readable medium" of amended claim 28 corresponds at least to the "internal memory" of original claim 28, and thus, does not constitute new matter.

Accordingly, the Applicants respectfully submit that claim 28 is now directed to statutory subject matter (see MPEP 2106.01). As such, the Applicants respectfully request that the Examiner withdraw the §101 rejection.

III. Rejection Under 35 U.S.C. §112, First Paragraph

The Office Action rejects claim 28 under 35 U.S.C. §112, first paragraph, alleging that the claim fails to comply with the written description requirement. Specifically the Office Action asserts that, because the specification does not include a description of a computer program, the "computer program product," as recited in original claim 28, prior to amendment, constitutes new matter. The Applicants respectfully traverse this rejection.

The Applicants specifically note that, according to MPEP 2163.06, "the claims as filed in the original specification are part of the disclosure," and as such, cannot be considered to be new matter. As indicated above, support for the "computer program product," as recited in original claim 28, and the "computer-readable medium," as now recited in amended claim 28, may be found at least in the original claim 28, which was directed to a "[c]omputer program product directly loadable into the internal memory of a digital processing system and comprising software code portions for performing the method of claim 1 when said product is run by said digital processing system." Because original claim 28 is part of the disclosure, the subject matter of claim 28 cannot be considered to be new matter. Furthermore, the Applicants submit that the "computer-readable medium" of amended claim 28 corresponds at least to the "internal memory" of original claim 28, and thus, also cannot be considered to be new matter.

Accordingly, the Applicants respectfully request that the Examiner withdraw the §112, first paragraph, rejection.

IV. Claims Define Patentable Subject Matter

The Office Action rejects claims 1-8, 16-17, 20-21, and 29 under 35 U.S.C. §103(a) as being unpatentable over Affes (US 2002/0051433) in view of Unser ("Sampling – 50 Years After Shannon", Proceedings of the IEEE, Vol. 88, No. 4: pages 569-587, April 2000); rejects claims 9-15, 18-19, 22-25, and 30 under 35 U.S.C. §103(a) as being unpatentable over Affes in view of Unser and further in view of Agee (US 2003/0123384); rejects claim 26 under 35 U.S.C. §103(a) as being unpatentable over Affes in view of Unser, Agee, and further in view of Huang (USPN 6,370,129); rejects claim 27 under 35 U.S.C. §103(a) as being unpatentable over Affes in view of Unser and further in view of Shatti (USPN 7,076,168); rejects claims 28 under 35 U.S.C. §103(a) as being unpatentable over Affes in view of Unser and further in view of Langberg (USPN 5,852,630); and rejects claims 31-33 under 35 U.S.C. §103(a) as being unpatentable over Affes in view of Unser, Agee, and further in view of Baum (USPN 7,218,666). The Applicants respectfully traverse these rejections.

The Applicants disclose a novel and unobvious approach for processing signals that are sent over a wireless communication channel. For example, in accordance with an embodiment of the disclosure, a receiver may decode a received signal by sampling the received signal with a sampling frequency that is lower than the sampling frequency given by the Shannon theorem, but greater than the rate of innovation of the received signal. Such a decoding method may thus reduce the complexity and cost of receivers while retaining equivalent decoding performances.

Amended claim 1 recites, *inter alia*, "sampling the received signal (y(t)) with a sampling frequency (f_s) lower than the sampling frequency given by the Shannon theorem, but greater than the rate of innovation (ρ) of said received signal (y(t)), for generating a set of sampled values ($y(nT_s)$)" (emphasis added). Claims 28, 34, and 61-62 recite similar features.

In rejecting claim 1, the Office Action acknowledges that the primary reference, Affes, does not disclose or suggest sampling the signal with a sampling frequency that is greater than the rate of innovation of the signal, as recited in claim 1. The Office Action, however, relies on Unser to make up for the lack of disclosure in Affes.

The Office Action cites section V, B, lines 7-9, of Unser, and asserts that Unser discloses a sampling frequency that is greater than the rate of innovation. Unser, however, fails to disclose or suggest this feature.

Unser, at section V, B, lines 7-9, specifically states that "a reconstruction is generally possible provided there are as many measurements as there are degrees of freedom in the signal representation." According to the present specification, at page 5, lines 28-29, the rate of innovation of a signal, as recited in claim 1, may be defined as the number of degrees of freedom of the signal per unit of time. Claim 1, however, also expressly requires sampling the signal with a sampling frequency that is greater than the rate of innovation of the signal. Unser merely suggests that the number of measurements of a signal should be equal to the degrees of freedom of the signal (i.e. "as many measurements as there are degrees of freedom"). Suggesting that a value be equal to another value is not suggesting that it should be greater than that other value. Unser nowhere whatsoever suggests that the number of measurements of a signal should be greater than the degrees of freedom of that signal. Accordingly, Unser fails to disclose or suggest a method including at least sampling a signal with a sampling frequency that is greater than the rate of innovation, as expressly recited in claim 1.

The Office Action cites secondary references Agee, Huang, Shatti, Langberg, Baum in its rejections of various dependent claims, but does not rely on these references in its rejection of claim 1. Moreover, none of these references, individually or in combination with Affes and

Unser, suggest or disclose a method including at least sampling a signal with a sampling frequency that is greater than the rate of innovation, as expressly recited in claim 1, and as such, fail to make up for the deficiencies of Affes and Unser.

In accordance with the above remarks, the Applicants respectfully submit that Affes, Unser, Agee, Huang, Shatti, Langberg, Baum, either individually or in combination, fail to disclose or suggest at least the sampling frequency feature recited in claim 1, and similarly recited in claims 28, 34, and 61-62

Accordingly the Applicants submit that claims 1, 28, 34, and 61-62 define patentable subject matter. Claims 2-33 and 35-60 depend from claims 1 and 34, respectively, and therefore, also define patentable subject matter.

V. Conclusion

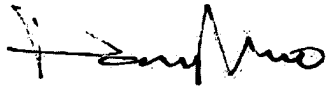
In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-62 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number set forth below.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully Submitted,

Dated: 6/17/08

By: 

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